

What is claimed is:

1. A skate boot apparatus comprising:
 - a base including an upper face configured to receive a wearer's foot and a lower face configured to structurally support a skate mechanism; and
 - 5 an upper support integrated with the base and extending upwardly from the base to a point above a wearer's ankle, the upper support having a first rigidity near the base and a second rigidity near the point above the wearer's ankle lower than the first rigidity.
- 10 2. The apparatus of Claim 1, further comprising a plurality of integrated inserts configured to engage a plurality of skate attachment devices to couple the base to the skate mechanism.
3. The apparatus of Claim 2, wherein the plurality of inserts are disposed toward circumferential edges of the base.
- 15 4. The apparatus of Claim 2, wherein the inserts are integrated with the base and configured to engage the skate mechanism through the lower face.
5. The apparatus of Claim 4, wherein the base is molded to at least partially encompass the inserts.
- 20 6. The apparatus of Claim 2, wherein at least one of the inserts includes an inwardly threaded female connector configured to receive one of the skate attachment devices, the skate attachment device including an outwardly threaded male connector.
7. The apparatus of Claim 2, wherein at least one of the inserts includes an outwardly threaded male connector configured to engage one of the skate attachment devices, the skate attachment device including an inwardly threaded female connector.
- 25 8. The apparatus of Claim 2, wherein at least one of the inserts includes a rigid sleeve configured to receive one of the skate attachment devices.
9. The apparatus of Claim 2, wherein at least one of the inserts includes a rivet.
10. The apparatus of Claim 1, further comprising at least one integral lug extending generally downwardly from the base to engage the skate mechanism.



11. The apparatus of Claim 10, wherein the integral lug includes at least one attachment point extending through the integral lug in a direction generally parallel to the lower face of the base, the attachment point being configured to receive a skate attachment device.

12. The apparatus of Claim 10, wherein the integral lug is configured to interleavably engage a skate mechanism.

13. The apparatus of Claim 1, wherein the base includes a core section.

14. The apparatus of Claim 13, wherein the core section is at least one of fixably molded within the boot and injection molded into a recess formed within the boot.

15. The apparatus of Claim 13, wherein core section includes a rigid foam material.

16. The apparatus of Claim 13, wherein core section includes a plurality of recesses to accommodate inserts coupled with the base, the inserts having protrusions extending into an interior of the boot.

17. The apparatus of Claim 13, wherein the core section is formed separately from the boot and received into a core section recess in the boot.

18. The apparatus of Claim 17, wherein the core section is custom formed to accommodate the wearer's foot.

19. The apparatus of Claim 17, wherein the core section is bonded to the upper surface of the base of the boot.

20. The apparatus of Claim 1, wherein the boot is formed by at least one of joining a plurality of layers and molding.

21. The apparatus of Claim 20, wherein a varying rigidity of the boot ranging from the first rigidity to the second rigidity is created by using a varying number of the layers, wherein sections of the boot having a high rigidity include a first number of the layers and sections of the boot having the low rigidity include a second number of the layers where the first number is greater than the second number.

22. The apparatus of Claim 21, wherein the varying rigidity of the boot is created by using layers including layers of varying compositions, each of the varying compositions having varying rigidities.

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23. The apparatus of Claim 20, wherein the layers include at least one hingably coupled layer, the hingably coupled layer being partially joined with the boot toward the base and being partially unjoined with the boot away from the base such that the hingably coupled layer is movable at an upper end configured to receive the wearer's ankle.

5 24. The apparatus of Claim 20, wherein the layers include at least one of a long-woven fiber material.

25. The apparatus of Claim 24, wherein the long-woven fiber material includes one of a fiberglass, a carbon-fiber, and Kevlar.

10 26. The apparatus of Claim 20, wherein at least one of the layers includes an impact-resistant material.

29. The apparatus of Claim 26, wherein the impact-resistant material includes a polyurethane plastic.

30. The apparatus of Claim 26, wherein the layer of impact-resistant material is an outermost layer of the boot.

15 31. The apparatus of Claim 30, wherein the layer of impact-resistant material is transparent.

32. The apparatus of Claim 31, further comprising a graphical design wherein the layer of impact-resistant material is disposed to at least partially protect a graphical design disposed beneath an outer surface of the layer of impact-resistant material.

20 33. The apparatus of Claim 32, wherein the graphical design is sublimated on a non-outward-facing side of the layer.

34. The apparatus of Claim 20, wherein the varying rigidity of the boot is created by molding using a varying thickness wherein sections of the boot having a high rigidity include a first thickness and sections of the boot having the low rigidity include a second thickness
25 where the first thickness is greater than the second thickness.

35. The apparatus of Claim 20, wherein the varying rigidity of the boot is created by molding using a material of varying rigidity wherein sections of the boot having a high rigidity include a first material and sections of the boot having the low rigidity include a second material where the first material is more rigid than the second material.

36. The apparatus of Claim 35, wherein at least one of the first material and the second material includes a short fiber material.

37. The apparatus of Claim 36, wherein a rigidity of the short fiber material is increasable by increasing a fiber concentration in the short fiber material.

5 38. The apparatus of Claim 1, wherein the upper support is configured to extend generally over a metatarsal of the wearer's foot.

39. The apparatus of Claim 1, wherein the upper support is configured to receive a toe cap, the upper support being configured to at least partially extend over a trailing edge of the toe cap.

10 40. The apparatus of Claim 1, wherein the upper face of the base includes a recess for receiving an edge of a toe cap.

41. The apparatus of Claim 1, wherein at least one of the base and the upper support include a ventilation opening extending through the upper support.

42. A skate boot apparatus comprising:
15 a base including an upper face configured to receive a wearer's foot and a lower face configured to structurally support a skate mechanism; and
a boot encompassing the base within a bottom side, the boot including:
a contoured upper extending upwardly past the upper face of the base to
surround an ankle joint, a heel, and at least a portion of a foot of the
20 wearer, the contoured upper having a first rigidity near the base and a second rigidity near the point above the wearer's ankle lower than the first rigidity; and
a shaped lower surface extending from the contoured upper beneath the
lower face of the base, the shaped lower surface being configured to
25 engage the skate mechanism.

43. The apparatus of Claim 42, wherein the shaped lower surface includes a plurality of integrated inserts configured to engage a plurality of skate attachment devices to couple the base to the skate mechanism.

44. The apparatus of Claim 43, wherein the plurality of inserts are disposed toward
30 circumferential edges of the base.

45. The apparatus of Claim 42, wherein the shaped lower surface includes at least one integral lug extending generally downwardly from the base to engage the skate mechanism.

46. The apparatus of Claim 45, wherein the integral lug includes at least one attachment point extending through the integral lug in a direction generally parallel to the lower face of the base, the attachment point being configured to receive a skate attachment device.

47. The apparatus of Claim 45, wherein the integral lug is configured to interleavably engage a skate mechanism.

48. The apparatus of Claim 42, wherein the base includes a core section, the core section being one of fixably molded within the boot and injection molded into a recess formed within the boot.

49. The apparatus of Claim 42, wherein the base is configured to receive a core section, the core section being separately formed to accommodate the wearer's foot of an identified wearer and received into a core section recess in the boot.

50. The apparatus of Claim 42, wherein the contoured upper is custom formed to accommodate at least one of the wearer's foot and the wearer's ankle of an identified wearer.

51. The apparatus of Claim 42, wherein the boot is formed by at least one of joining a plurality of layers and molding.

52. The apparatus of Claim 51, wherein a varying rigidity of the boot ranging from the first rigidity to the second rigidity is created by using a varying number of the layers, wherein sections of the boot having a high rigidity include a first number of the layers and sections of the boot having the low rigidity include a second number of the layers where the first number is greater than the second number.

53. The apparatus of Claim 51, wherein a varying rigidity of the boot ranging from the first rigidity to the second rigidity is created by using layers including layers of varying compositions, each of the varying compositions having varying rigidities.

54. The apparatus of Claim 51, wherein the layers include at least one hingably coupled layer, the hingably coupled layer being partially joined with the boot toward the base and being partially unjoined with the boot away from the base such that the hingably coupled layer is movable at an upper end configured to receive the wearer's ankle.

55. The apparatus of Claim 51, wherein the layers include at least one of a long-woven fiber material.

56. The apparatus of Claim 55, wherein the long-woven fiber material includes one of a fiberglass, a carbon-fiber, and Kevlar.

5 57. The apparatus of Claim 51, wherein at least one of the layers includes an impact-resistant material.

58. The apparatus of Claim 57, wherein the impact-resistant material includes a polyurethane plastic.

59. The apparatus of Claim 57, wherein the layer of impact-resistant material is an
10 outermost layer of the boot.

60. The apparatus of Claim 59, wherein the layer of impact-resistant material is transparent.

61. The apparatus of Claim 60, further comprising a graphical design wherein the layer
of impact-resistant material is disposed to at least partially protect a graphical design
15 disposed beneath an outer surface of the layer of impact-resistant material.

62. The apparatus of Claim 61, wherein the graphical design is sublimated on a non-outward-facing side of the layer.

63. The apparatus of Claim 51, wherein the varying rigidity of the boot is created by
molding using a varying thickness wherein sections of the boot having a high rigidity include
20 a first thickness and sections of the boot having the low rigidity include a second thickness
where the first thickness is greater than the second thickness.

64. The apparatus of Claim 51, wherein the varying rigidity of the boot is created by
molding using a material of varying rigidity wherein sections of the boot having a high
rigidity include a first material and sections of the boot having the low rigidity include a
25 second material where the first material is more rigid than the second material.

65. The apparatus of Claim 64, wherein at least one of the first material and the second material includes a short fiber material.



66. The apparatus of Claim 65, wherein a rigidity of the short fiber material is increasable by increasing a fiber concentration in the short fiber material.

67. The apparatus of Claim 42, wherein the upper support is configured to extend generally over a metatarsal of the wearer's foot.

5 68. The apparatus of Claim 42, wherein the upper support is configured to receive a toe cap, the upper support being configured to at least partially extend over a trailing edge of the toe cap.

69. The apparatus of Claim 42, wherein the upper face of the base includes a recess for receiving an edge of a toe cap.

10 70. The apparatus of Claim 42, wherein at least one of the base and the upper support include a ventilation opening extending through the upper support.

71. An ice skate system comprising:

 a skate mechanism including:

 a skating device;

15 a skate frame supporting the skating device on a first side and configured to engage a mounting bracket on a second side; and

 a mounting bracket coupled with the skate frame, the mounting bracket being configured to mount the skate mechanism;

 a boot including:

20 a base including an upper face configured to receive a wearer's foot and a lower face configured to structurally support the skate mechanism, the base including a plurality of inserts configured to receive a plurality of skate attachment devices; and

 a boot encompassing the base within a bottom side, the boot including:

25 a contoured upper extending upwardly past the upper face of the base to surround an ankle joint, a heel, and at least a portion of a foot of the wearer, the contoured upper having a first rigidity near the base and a second rigidity at a point configured to engage a wearer's ankle, the second rigidity being lower than
30 the first rigidity; and

a shaped lower surface extending from the contoured upper
beneath the lower face of the base and shaped to receive an
upper face of the skate mechanism;
a boot lining disposed inside the boot and configured to receive the foot of the
5 wearer; and
a plurality of skate attachment devices configured to join the skate mechanism to
the boot.

72. The system of Claim 71, wherein the shaped lower surface includes a plurality of
integrated inserts configured to engage a plurality of skate attachment devices to couple the
10 base to the skate mechanism.

73. The system of Claim 72, wherein the plurality of inserts are disposed toward
circumferential edges of the base.

74. The system of Claim 71, wherein the shaped lower surface includes at least one
integral lug extending generally downwardly from the base to engage the skate mechanism.

15 75. The system of Claim 74, wherein the integral lug includes at least one attachment
point extending through the integral lug in a direction generally parallel to the lower face of
the base, the attachment point being configured to receive a skate attachment device.

76. The system of Claim 74, wherein the integral lug is configured to interleavably
engage a skate mechanism.

20 77. The system of Claim 71, wherein the base includes a core section, the core section
being one of fixably molded within the boot and injection molded into a recess formed within
the boot.

78. The system of Claim 71, wherein the base is configured to receive a core section,
the core section being separately formed to accommodate the wearer's foot of an identified
25 wearer and received into a core section recess in the boot.

79. The system of Claim 78, wherein the core section is custom formed to
accommodate the wearer's foot of an identified wearer.

80. The system of Claim 71, wherein the contoured is custom formed to accommodate
at least one of the wearer's foot and the wearer's ankle of an identified wearer.

81. The system of Claim 71, wherein the boot is formed by at least one of joining a plurality of layers and molding.

82. The system of Claim 81, wherein a varying rigidity of the boot ranging from the first rigidity to the second rigidity is created by using a varying number of the layers, wherein sections of the boot having a high rigidity include a first number of the layers and sections of the boot having the low rigidity include a second number of the layers where the first number is greater than the second number.

83. The system of Claim 81, wherein the varying rigidity of the boot is created by using layers including layers of varying compositions, each of the varying compositions having varying rigidities.

84. The system of Claim 81, wherein the layers include at least one hingably coupled layer, the hingably coupled layer being partially joined with the boot toward the base and being partially unjoined with the boot away from the base such that the hingably coupled layer is movable at an upper end configured to receive the wearer's ankle.

85. The system of Claim 76, wherein the layers include at least one of a long-woven fiber material.

86. The system of Claim 85, wherein the long-woven fiber material includes one of a fiberglass, a carbon-fiber, and Kevlar.

87. The system of Claim 81, wherein at least one of the layers includes an impact-resistant material.

88. The system of Claim 87, wherein the impact-resistant material includes a polyurethane plastic.

89. The system of Claim 87, wherein the layer of impact-resistant material is an outermost layer of the boot.

90. The system of Claim 89, wherein the layer of impact-resistant material is transparent.

91. The system of Claim 90, further comprising a graphical design wherein the layer of impact-resistant material is disposed to at least partially protect a graphical design disposed beneath an outer surface of the layer of impact-resistant material.


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92. The system of Claim 91, wherein the graphical design is sublimated on a non-outward-facing side of the layer.

93. The system of Claim 81, wherein the varying rigidity of the boot is created by molding using a varying thickness wherein sections of the boot having a high rigidity include
5 a first thickness and sections of the boot having the low rigidity include a second thickness where the first thickness is greater than the second thickness.

94. The system of Claim 81, wherein the varying rigidity of the boot is created by molding using a material of varying rigidity wherein sections of the boot having a high rigidity include a first material and sections of the boot having the low rigidity include a
10 second material where the first material is more rigid than the second material.

95. The system of Claim 94, wherein at least one of the first material and the second material includes a short fiber material.

96. The system of Claim 95, wherein a rigidity of the short fiber material is increasable by increasing a fiber concentration in the short fiber material.

15 97. The system of Claim 71, wherein the upper support is configured to extend generally over a metatarsal of the wearer's foot.

98. The system of Claim 71, wherein the upper support is configured to receive a toe cap, the upper support being configured to at least partially extend over a trailing edge of the toe cap.

20 99. The system of Claim 71, wherein the upper face of the base includes a recess for receiving an edge of a toe cap.

100. The system of Claim 71, wherein at least one of the base and the upper support include a ventilation opening extending through the upper support.

101. A method for forming a skate boot, the method comprising:
25 forming a base including:
forming the base with an upper face configured to receive a wearer's foot;
and
forming a lower face configured to structurally support a skate mechanism; and

forming a boot including:

forming the boot around the base, integrating the base into the boot;

contouring an upper portion of the boot to surround a wearer's ankle, a
wearer's heel, and at least a portion of a wearer's foot, the upper
portion having a first rigidity near the base and a second rigidity at a
point configured to engage the wearer's ankle, the second rigidity
being lower than the first rigidity; and

shaping a lower surface of the boot beneath the lower face of the base to
receive the skate mechanism.

102. The method of Claim 101, further comprising shaping the lower surface to integrate
a plurality of inserts in the boot, the inserts being configured to engage a plurality of skate
attachment devices to couple the skate mechanism to the boot.

103. The method of Claim 102, further comprising molding the base to at least partially
encompass the inserts.

104. The method of Claim 101, further comprising shaping the lower surface to include
at least one integral lug extending generally downwardly from the base to engage the skate
mechanism.

105. The method of Claim 104, further comprising forming the integral lug to include at
least one attachment point extending through the integral lug in a direction generally parallel
to the lower face of the base, the attachment point being configured to receive a skate
attachment device.

106. The method of Claim 104, wherein the integral lug is configured to interleavably
engage a recess in a skate mechanism.

107. The method of Claim 101, wherein the boot is formed using at least one of joining a
plurality of layers and molding.

108. The method of Claim 101, wherein a varying rigidity of the boot ranging from the
first rigidity to the second rigidity is created by using a varying number of the layers, wherein
sections of the boot having a high rigidity include a first number of the layers and sections of
the boot having the low rigidity include a second number of the layers where the first number
is greater than the second number.

109. The method of Claim 108, wherein the varying rigidity of the boot is created by using layers including layers of varying compositions, each of the varying compositions having varying rigidities.

110. The method of Claim 108, wherein the layers include at least one hingably coupled layer, the hingably coupled layer being partially joined with the boot toward the base and being partially unjoined with the boot away from the base such that the hingably coupled layer is movable at an upper end configured to receive the wearer's ankle.

111. The method of Claim 108, wherein the layers include at least one of a long-woven fiber material.

112. The method of Claim 111, wherein the long-woven fiber material includes one of a fiberglass, a carbon-fiber, and Kevlar.

113. The method of Claim 108, wherein at least one of the layers includes an impact-resistant material.

114. The method of Claim 113, wherein the impact-resistant material includes a polyurethane plastic.

115. The method of Claim 113, wherein the layer of impact-resistant material is an outermost layer of the boot.

116. The method of Claim 115, wherein the layer of impact-resistant material is transparent.

117. The method of Claim 116, further comprising providing the boot with a graphical design wherein the layer of impact-resistant material is disposed to at least partially protect a graphical design disposed beneath an outer surface of the layer of impact-resistant material.

118. The method of Claim 117, further comprising sublimating the graphical design on a non-outward-facing side of the layer.

119. The method of Claim 108, wherein the varying rigidity of the boot is created by molding using a varying thickness wherein sections of the boot having a high rigidity include a first thickness and sections of the boot having the low rigidity include a second thickness where the first thickness is greater than the second thickness.

120. The method of Claim 108, wherein the varying rigidity of the boot is created by molding using a material of varying rigidity wherein sections of the boot having a high rigidity include a first material and sections of the boot having the low rigidity include a second material where the first material is more rigid than the second material.

5 121. The method of Claim 120, wherein at least one of the first material and the second material includes a short fiber material.

122. The method of Claim 121, wherein a rigidity of the short fiber material is increasable by increasing a fiber concentration in the short fiber material.

10 123. The method of Claim 101, further comprising extending the upper support generally over a metatarsal of the wearer's foot.

124. The method of Claim 101, wherein the upper support is configured to receive a toe cap, the upper support being configured to at least partially extend over a trailing edge of the toe cap.

15 125. The method of Claim 101, wherein the upper face of the base includes a recess for receiving an edge of a toe cap.

126. The method of Claim 101, wherein at least one of the base and the upper support include a ventilation opening extending through the upper support.